

Site Investigation
Final
Site-Specific Field Sampling Plan Attachment
for Range 16 AST, Parcel 177(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

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List of Acronyms

ADEM	Alabama Department of Environmental Management
AST	aboveground storage tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
DOE	Directorate of Environment
DQO	data quality objective
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
GPR	ground-penetrating radar
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PID	photoionization detector
PPE	personal protective equipment
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama at the Range 16 Aboveground Storage Tank (AST), Parcel 177(7) to determine the presence or absence of potential site-specific chemicals. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Range 16 AST, Parcel 177(7).

There is a conflict in the environmental baseline study text and the Table 6.0-1 prepared by Environmental Science and Engineering Inc. (ESE), 1998 where Parcel 177 is classified both as a Category 2 parcel and a Category 7 parcel. This site was assigned to IT Corporation as a Category 7 parcel; therefore, Parcel 177 is referenced throughout this site-specific field sampling plan (SFSP) as a Category 7 parcel.

The AST located at Range 16 is used only for No. 2 heating oil storage. Many of the range offices require heating infrequently, and it is more cost-effective to maintain a heating-oil AST at these remote areas than to use other sources of heating during the winter. A release has been documented at Range 16. A valve was found to be leaking, and a drip pan was not present (EBS, 1998). During the IT site visit (June, 1998) an approximate 2-by-2-foot area of stained gravel was noted directly under the valve of the AST.

IT will collect two soil samples to be analyzed for semivolatile organic compounds. The potential contaminant source is the heating oil and therefore chemical analysis of the samples will include semivolatile organic compounds. Results from this analysis will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

The Range 16 AST falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil borings.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Range 16 AST, Parcel 177 (7) will be used in conjunction with the site-specific safety and

health plan (SSHP), and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies for the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Range 16 Aboveground Storage Tank (AST), Parcel 177(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

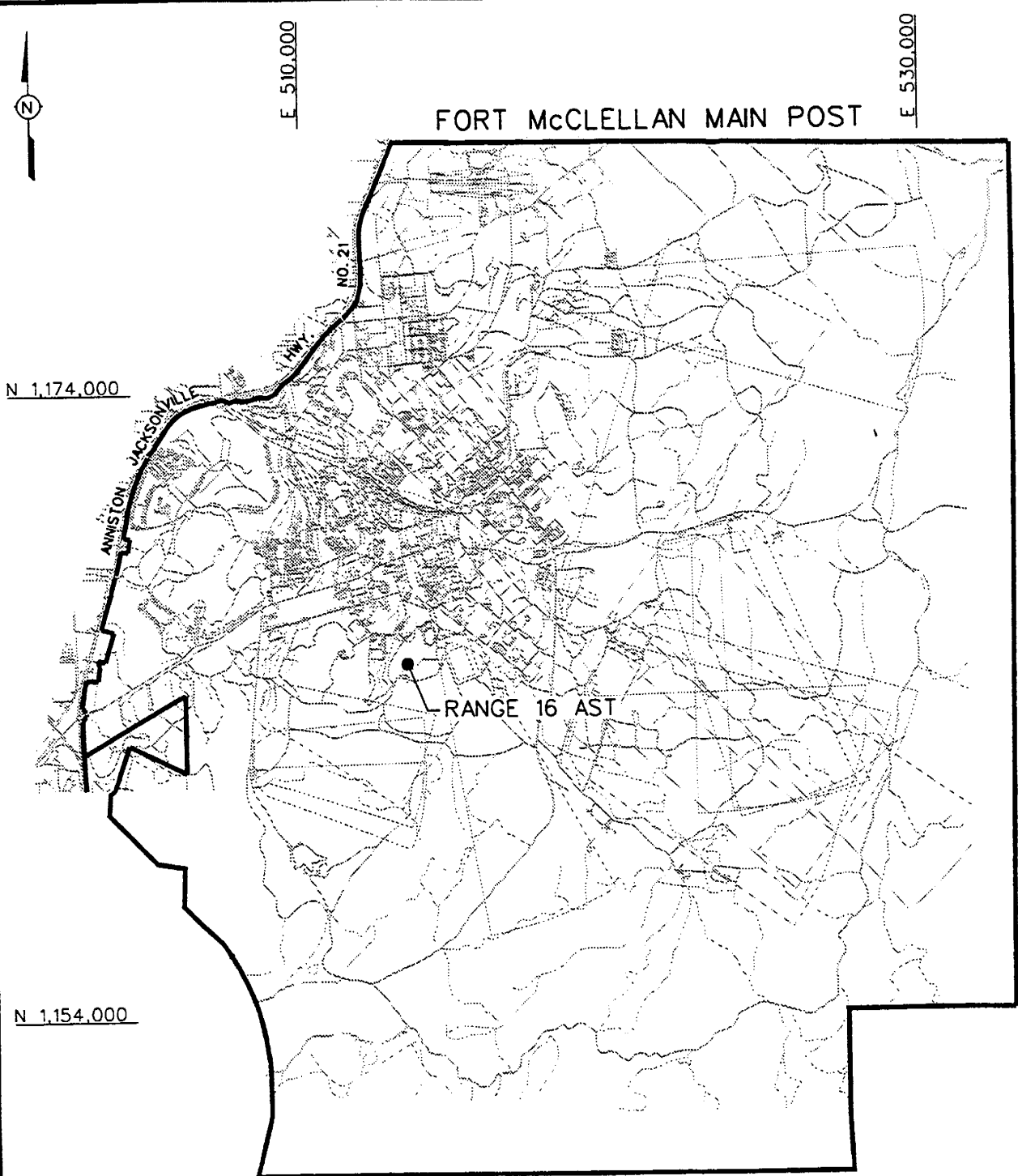
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Range 16 AST, Parcel 177(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Range 16 AST, Parcel 177(7) site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

There is a conflict in the environmental baseline study text and the Table 6.0-1 prepared by Environmental Science and Engineering Inc. (ESE), 1998 where Parcel 177 is classified both as a Category 2 parcel and a Category 7 parcel. This site was assigned to IT Corporation as a Category 7 parcel; therefore, Parcel 177 is referenced throughout this site-specific field sampling plan (SFSP) as a Category 7 parcel.

1.2 Site Description

The AST at Range 16, Parcel 177(7), (south slope of Howitzer Hill) is located approximately 60 feet north of an unimproved road on the far southeastern portion of Main Post (Figure 1-1). It is adjacent to a 60 by 20 foot concrete foundation which is immediately north of the tank (Figure 1-2). The AST is a "storage-only" tank for No. 2 heating oil. Many of the range offices require heating infrequently, and it is more cost efficient to maintain a heating oil AST at these remote buildings than to use other sources to heat the offices during the winter months. A release has been documented at the Range 16 tank. The valve was found to be leaking and a drip pan was not present (EBS, 1998). During the IT site visit (June, 1998), an approximate 2-by-2-foot area of stained gravel was noted directly under the valve. Approximately 80 feet east and across an

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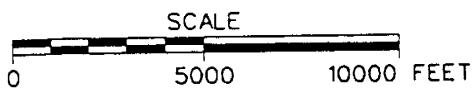
LEGEND:



FORT McCLELLAN BOUNDARY

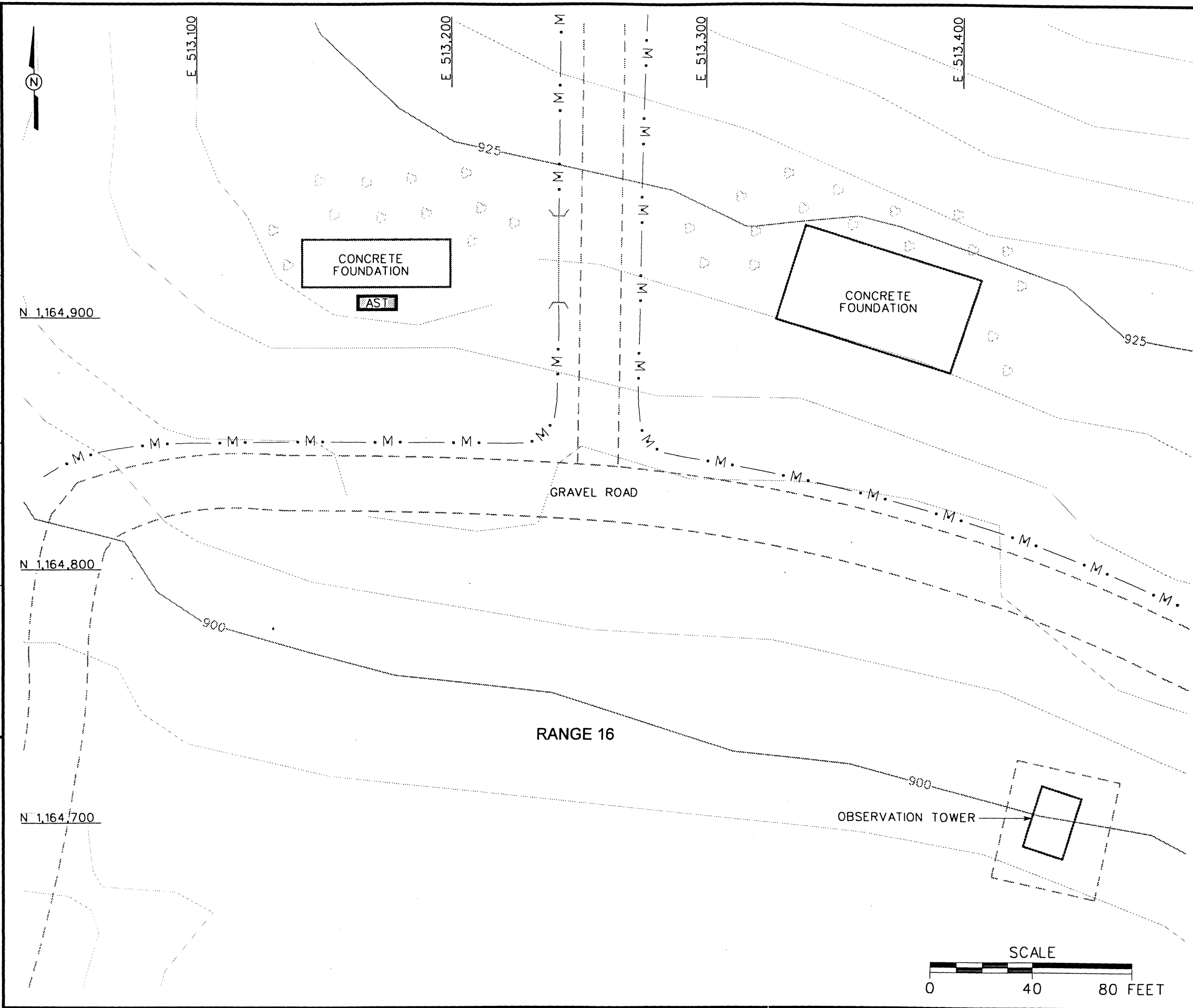
FIGURE 1-1
SITE LOCATION MAP
RANGE 16 AST
PARCEL 177(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - CULVERT WITH HEADWALL
 - MANMADE SURFACE DRAINAGE FEATURE

FIGURE 1-2
SITE MAP
RANGE 16 AST
PARCEL 177(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



unimproved road (oriented north-south) is another concrete foundation (82 by 24 feet). Both foundations are all that remains of the former buildings at this site. Trees bound these structures on the west, north and east, and the second unimproved road which lies between the foundations, joins the unimproved road that leads to Range 16 to the south. Ground slope is to the south. The site for the buildings previously located at this parcel was graded from the slope of Howitzer Hill at an elevation between 900 and 950 feet. A surface water runoff drain pipe is located adjacent (west) to the north-south unimproved road. This covered drain pipe prevents the washout of gravel that extends from the road to the former building foundation. The area immediately surrounding the AST is covered with gravel. Between the gravel and the unimproved road to the south is an area of grass with small patches of bare ground. There are not any significant natural drainage features within approximately one-quarter mile of the AST. South Branch is located approximately 1,600 feet to the east and a tributary is located approximately 1,300 feet to the west of the site.

Range 16 was in use from 1951 through mid-1994 (it is now inactive). Ordnance used at this range most recently were M-203 (4 millimeter grenade), M-72 LAW, and M-18 claymore mine (Case 1995 and 1996); historically 3.5-rockets (bazooka), and hand grenades were also used. The rounds that were fired at this range historically were dud-producing rounds. The 142nd EOD has looked at this range and found layers of unexploded ordnance (UXO) (UXO on the ground surface with more UXO buried beneath the ground surface). The 142nd has also identified ordnance types not recently fired at this range. Several FTMC personnel stated that this range is the most heavily UXO-contaminated range that they are aware of at FTMC. The larger of the two impact areas was established to encompass the impact area from this range.

Ordnance ranges have been constructed and abandoned at FTMC since the Spanish-American War. The existence of these ranges is generally unknown to current FTMC personnel. These ranges are now largely overgrown, or completely overgrown and were not documented. A complete record of range locations and training activities has not been maintained during the history of FTMC. Few maps of historical FTMC operations survived a purge of files performed several years ago at the Directorate of Engineering and Housing (DEH). Precise information regarding the location of firing lines and impact areas is unavailable. The oldest available maps that identified ranges (dated 1917) were general in nature and contained no detail of firing points on impact areas. FTMC established the Dud Impact Area south of Range 17 after children brought home live rounds. A second Dud Impact Area was established south of Range 16. A dud is any munition that was not armed as intended or that has failed to explode after being

armed. A dud may contain live explosives, and is considered very hazardous. It is treated as live round. These two Dud Impact Areas are posted and are permanently off-limits to all civilian and military personnel.

Two soil types are associated with this parcel: the Allen series and the Anniston series.

The Allen Series consists of deep, strongly acid, well-drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher lying soils which developed from weathered sandstone, shale and quartzite. The surface horizon is chiefly dark grayish-brown fine sandy clay loam. Fragments of sandstone and quartzite, as much as 8 inches diameter, are on the surface and throughout the soil. In Calhoun County, the Allen soils are mapped only with the Anniston as undifferentiated units.

The Anniston Series consists of deep, strongly acid, well-drained soils that have developed in old local alluvium. The parent material has washed from the adjacent, higher lying soils. The surface horizon is mainly very dark brown loam, and the subsoil is mainly dark-red sandy clay loam. Sandstone and quartzite gravel and cobbles, as much as 8 inches diameter, are on the surface and throughout the soil.

The specific soil type at Range 16 is Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded (AcE2). These soils have stronger slopes and more rapid runoff. In many places, severely eroded patches and shallow gullies are common. The surface soil (plow layer) is reddish-brown to dark reddish-brown gravelly clay loam. Infiltration is slow and the capacity to hold moisture is low. Typically, depth to water is greater than 20 feet, and depth to bedrock (limestone or shale) is from 2 feet to greater than 10 feet.

1.3 Scope of Work

The scope of work for activities associated with the Range 16 AST, Parcel 177(7), as specified in the statement of work (USACE, 1998b), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.

- Conduct UXO avoidance surface sweeps and downhole surveys.
- Collect one surface soil and one subsurface soil sample to determine the presence or absence of contamination, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared to evaluate the absence or presence of contaminants at this site, and to recommend further remedial action, if appropriate.

2.0 Summary of Previous Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an EBS to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. Previous environmental studies have not been conducted at this site.

There is a conflict in the environmental baseline study text and the Table 6.0-1 prepared by ESE (1998), where Parcel 177 is classified both as a Category 2 parcel and a Category 7 parcel. This site was assigned to IT as a Category 7 parcel; therefore, Parcel 177 is referenced throughout this SFSP as a Category 7 parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Range 16 AST, Parcel 177(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Range 16 AST, Parcel 177(7) is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, the procedures necessary to meet the objectives of the site investigation, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory in Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the site investigation at the Range 16 AST, Parcel 177(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3 below. This conceptual model was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or to rule out the existence of residual PSSC in the site media.

Table 3-1

**Summary of Data Quality Objectives
Site Investigation
Range 16 AST, Parcel 177(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors	None	<u>Contaminant Source</u> Leaking No. 2 heating oil storage tank	<u>Surface soil</u>	SI to confirm whether potential site-specific chemicals are present in the site media. Definitive quality data for future decision making	<u>Surface soil</u> SVOCs	Definitive + CESAS Level B	1 direct-push + QC
		<u>Migration Pathways</u> Infiltration to subsurface soil. Dust emissions and volatilization into ambient air. <u>Potential Receptors</u> Groundskeeper (future) Construction worker (future) Recreational site user (future) Resident (future) <u>PSSC</u> Heating oil	<u>Subsurface soil</u>		<u>Subsurface Soil</u> SVOCs	Definitive + CESAS Level B	1 direct-push + QC

ADEM - Alabama Department of Environmental Management.
CESAS - Corps of Engineers South Atlantic Savannah.
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
PSSC - Potential site-specific chemical.

QC - Quality control.
SI - Supplemental investigation.
SVOC - Semivolatile organic compound.
USACE - U.S. Army Corps of Engineers.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating potential risks to human health in the risk assessment. The CSEM includes all receptors and potential exposure pathways appropriate to all plausible scenarios. The CSEM facilitates consistent and comprehensive evaluation of risk to human health through graphically presenting all possible exposure pathways, including all sources, release and transport pathways, and exposure routes. In addition, the CSEM helps to ensure that potential pathways are not overlooked. The elements of a complete exposure pathway and CSEM are:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact scenarios with a contaminated source medium.

Parcel 177(7) is located in the far southeastern section of the Main Post on the side of a hill that slopes to the south. It is a single aboveground storage tank used to store No 2 heating oil. Two to three feet of gravel cover the ground under the tank. An approximately four-square feet area of stained gravel is present under the tank valve. It has been verified that the tank leaked in the past. Thus, semivolatile organic compounds (SVOC) are the most likely chemicals of potential concern at this site.

Primary contaminant releases at this site were probably limited to heating oil leaks and spills that entered surface soil. UXO is a potential health risk at this site, but is excluded from the human health risks addressed in this CSEM. Surface sweeps and downhole surveys of soil borings will be made to locate UXO at this site. The only significant potential contaminant transport pathways considered are infiltration to subsurface soil and dust emissions and volatilization to ambient air. The groundwater pathway is excluded due to the low probability that heating oil contamination would have migrated through the 20-foot deep or greater unsaturated zone at this location. The surface water pathway is excluded because it appears that infiltration is the only likely pathway for surface water removal and dissipation, given the gravel surface layer and the topography at this location.

Receptors in the CSEM include:

- Future groundskeeper, as ground maintenance personnel could work the area in the future, although the area is slated for future open land use
- Future construction worker, despite the expected future open land use, it is plausible that demolition or building crews could work at the site in the future
- Future recreational site user, because of the possibility of campers and other open site users
- Future resident, as a conservative measure.

The venison and fish consumption scenarios, along with the current receptor scenarios are excluded from the CSEM. The venison consumption is excluded because deer would not ingest enough contamination from a site limited to a few feet in diameter to produce a substantive health risk from subsequent biotransfer. Habitats that could support fish are not present in the vicinity of this site. Current receptor scenarios are excluded because the thick layer of gravel at the site render the soils inaccessible. A summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways for this site is provided by Table 3-1 and Figure 3-1.

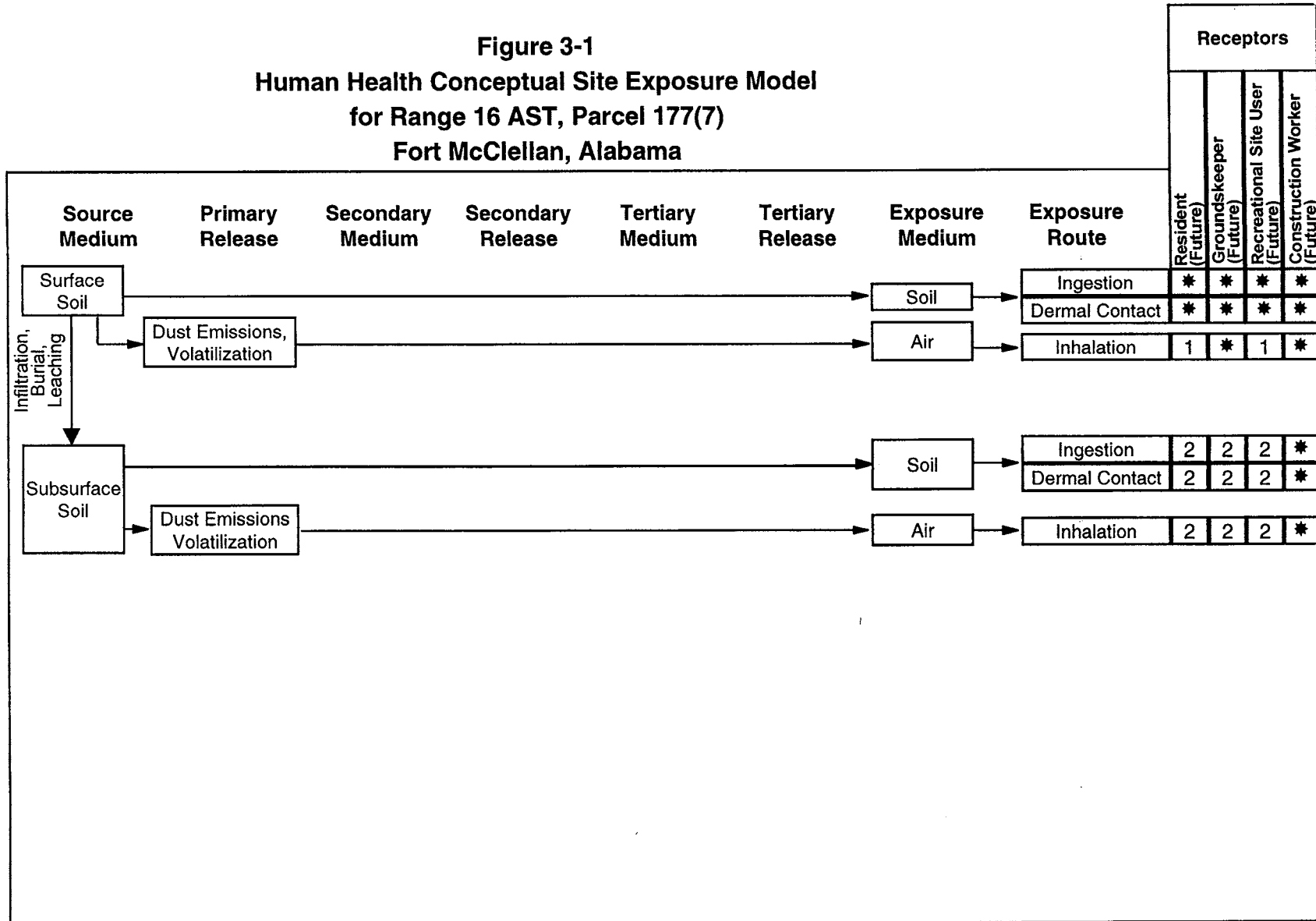
3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the site investigation at the Range 16 AST, Parcel 177(7). Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Range 16 AST, Parcel 177(7), will be based on comparing detected site chemicals concentrations with site-specific screening levels and background concentrations developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model
for Range 16 AST, Parcel 177(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the installation-wide WP.

3.4.2 Data Types and Quality

Surface and subsurface soil will be sampled and analyzed in order to meet the objectives of the site investigation at the Range 16 AST, Parcel 177(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, including Update III methods where applicable. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 9.0 of the QAP.

4.0 Field Activities

4.1 UXO Survey Requirements

The Range 16 AST falls within the “Possible Explosive Ordnance Impact Area” shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil borings.

4.1.1 Surface UXO Survey

An UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for easy avoidance. Subsurface metallic anomalies will not be disturbed, and will also be marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of geophysical equipment to be used are provided in Chapter 4.0 and Appendices D and E of the approved SAP (IT, 1998a).

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling, a downhole UXO survey will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Chapter 4.0 of the SAP (IT, 1998a), will continue until undisturbed soils are encountered or the borehole has been advanced to 12 feet below ground surface, whichever is reached first.

4.2 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at the location where soil samples will be collected, using the procedure outlined in Section 4.1.3 of the SAP. The site manager will mark the proposed location with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the location is cleared, the stake will be labeled as cleared.

4.3 Environmental Sampling

The environmental sampling performed during the site investigation at Range 16 AST, Parcel 177(7), will include the collection of surface soil and subsurface soil for chemical analysis. The placement of the sample location was determined by site physical characteristics noted during a

site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample location, media, and rationale are summarized in Table 4-1. The sample will be submitted for laboratory analyses of site related parameters listed in Section 4.6. The sample designations and QA/QC sample quantities are shown in Tables 4-2 and 4-3.

4.3.1 Surface Soil Sampling

One surface soil sample will be collected from one soil boring at the Range 16 AST, Parcel 177(7) site.

4.3.1.1 Sample Location and Rationale

Surface soil sampling rationale is presented in Table 4-1. The proposed sampling location is shown on Figure 4-1. The surface soil sample designation, depth, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sample location will be determined in the field by the on-site geologist.

4.3.1.2 Sample Collection

The surface soil sample will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Section 4.9.1.1 of the SAP. The collected soil sample will be screened using a photoionization detector (PID) in accordance with Section 4.5 of the SAP. Surface soil samples will be screened with the PID for information only, not to select which samples are submitted for analysis. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sample will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.2 Subsurface Soil Sampling

One subsurface soil sample will be collected from one soil boring at the Range 16 AST, Parcel 177(7) site.

4.3.2.1 Sample Location and Rationale

The subsurface soil sample will be collected from the soil boring shown on Figure 4-1. Subsurface soil sampling rationale is presented in Table 4-1. The subsurface soil sample designation, depth, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sample location will be determined in the field by the on-site geologist.

Table 4-1
Sampling Location and Rationale
Range 16 AST, Parcel 177(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sampling Location Rationale
PPMP-177-GP01	Surface Soil Subsurface Soil	Surface and subsurface soil will be collected from the stained area under the aboveground storage tank valve to determine if potential site-specific chemicals are present.

Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Range 16 AST, Parcel 177(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-177-GP01	PPMP-177-GP01-SS-KAA0001-REG	0-1	PPMP-177-GP01-SS-KAA0002-FD	PPMP-177-GP01-SS-KAA0003-FS		TCL SVOCs
	PPMP-177-GP01-DS-KAA0004-REG	^a			PPMP-177-GP01-DS-KAA0004-MS PPMP-177-GP01-DS-KAA0004-MSD	

^a Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Regular.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 4-3

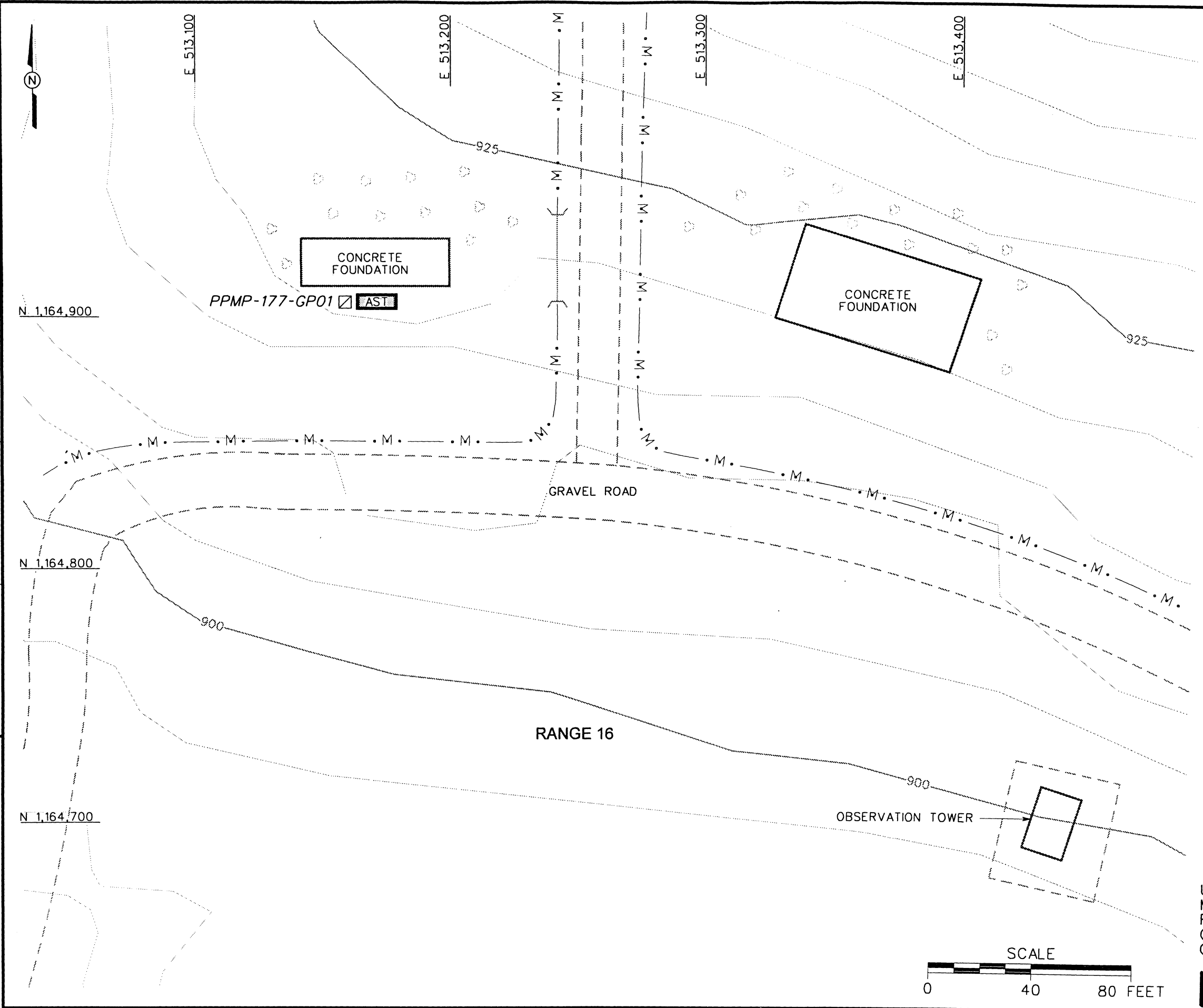
Analytical Samples
Range 16 AST, Parcel 177(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ⁽¹⁾					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Range 16 AST - Parcel 177(7): 2 soil matrix: 1 surface, 1 subsurface													
TCL SVOCs	8270C	soil	normal	2	1	2	1	1	1		1	6	1
Range 16 AST Subtotal:				2			1	1	1	0	1	6	1

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than one week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:	Quanterra Environmental Services 5815 Middlebrook Pike Knoxville, Tennessee 37921 Attn: John Reynolds Tel: 423-588-6401 Fax: 423-584-4315	USACE Laboratory split samples are shipped to:	USACE South Atlantic Division Laboratory Attn: Sample Receiving 611 South Cobb Drive Marietta, Georgia 30060-3112 Tel: 770-919-5270
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TAT - Turnaround time.
 MS/MSD - Matrix spike/matrix spike duplicate.
 QA/QC - Quality assurance/quality control.
 SVOC - Semivolatile organic compound.
 TCL - Target compound list.



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - CULVERT WITH HEADWALL
 - MANMADE SURFACE DRAINAGE FEATURE
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATION
RANGE 16 AST
PARCEL 177(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT INTERNATIONAL TECHNOLOGY CORPORATION

4.3.2.2 Sample Collection

The subsurface soil sample will be collected from the soil boring at a depth greater than 1 foot below the ground surface in the unsaturated zone. The soil boring will be advanced and the soil sample collected using the direct-push sampling procedures specified in Sections 4.7.1.1 of the SAP.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The sample will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Soil samples will be collected continuously to 12 feet or until groundwater or refusal is reached. A detailed lithology log will be written by the on-site geologist for each borehole. The collected subsurface soil sample will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (readings in ambient air). Typically, the sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples collected indicate readings above background using the PID, the deepest sample interval will be sent to the laboratory for analysis. A subsurface soil sample will be selected for analyses from any depth interval if the on-site geologist suspects potential site-specific contaminant (PSSC). Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight for determining the existence of any PSSC. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

4.4 Surveying of Sample Location

The sampling location will be marked with a pin flag, stake, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for the soil sampling location will be recorded using a GPS to provide accuracy within 1 meter. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Decontamination Requirements

Sampling and non-sampling equipment will be decontaminated primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination requirements are detailed in Section 4.10.1 of the SAP (IT, 1998a). Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of non-sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.6 Analytical Program

Samples collected at the location specified in Chapter 4.0 will be analyzed for SVOCs. The on-site sample coordinator will provide sampling containers and preservatives, and will coordinate sampling procedures with the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of analyses to be performed is based on the PSSC historically at the site and EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from Range 16 AST, Parcel 177(7), include the following:

- Target Compound List Semivolatile Organic Compounds - Method 8270C.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-3 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow requirements specified in Section 4.13.2 of the SAP (IT, 1998a).

Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Split samples will be shipped to:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia 30060
Telephone: (770) 919-5270.

4.8 Investigation-Derived Waste Management and Disposal

Investigation-derived waste (IDW) will be managed and disposed of as outlined in Appendix D of the SAP (IT, 1998a). The IDW expected to be generated from the field sampling at FTMC will consist of purge water from temporary well development and sampling activities, decontamination fluids, spent well materials, and personal protective equipment (PPE). IDW will be stored inside the fence area surrounding Buildings 335 and 336 while awaiting final disposal.

4.9 Site-Specific Safety and Health

Safety and health requirements for this SI are provided in the SSHP attachment for the DRMO Area, Parcel 85(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan Reuse and Redevelopment Authority of Alabama (FMRRA), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

U.S. Army Corps of Engineers (USACE), 1998a, *Archives Search Report, Maps*, Fort McClellan, Anniston Alabama, June.

U.S. Army Corps of Engineers (USACE), 1998b, *Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges*, May.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1990, *Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama (TS-PIC-89334)*, Environmental Photographic Interpretation Center (EPIC), Environmental Monitoring Systems Laboratory.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund*, Publication EPA 540-R-93-071.

Site-Specific Safety and Health Plans

Former Printing Plant, Building 2051, Parcel 173(7)

Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)

Range 16 AST, Parcel 177(7)